World Medical and Health Policy

Elevated Rates of Violence Victimization and Suicide Attempt Among Transgender and Gender Diverse Patients in an Urban, Safety Net Health System

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The extent to which violent victimization may explain higher rates of suicidality for transgender and gender diverse (TGD) populations is not well-understood. We identified likely-TGD patients using 2008–2019 electronic health record data and compared them with non-TGD patients to characterize differences in suicide attempt, ideation, and violent victimization. TGD patients ($n = 916$) had more suicide attempts (5.2 vs. 0.4 percent), ideation (20.5 vs. 1.8 percent), and violent victimization (5.4 vs. 1.7 percent, all $p < .001$) than non-TGDs ($n = 511{,}026$). Violent victimization and TGD cohort were independent predictors of suicide attempt (odds ratios [ORs], 7.23 and 10.84) and ideation (ORs, 6.83 and 11.03, all $p < .001$). We did not observe a differential impact of violent victimization for gender minorities. TGD patients are at higher baseline risk for suicidality, which is higher still for those experiencing violent victimization. Routine screening for both outcomes, including in primary care settings, may improve treatment.

KEY WORDS: transgender and gender diverse, LGBTQ, suicide attempt, victimization, electronic health record

Introduction

Transgender and gender diverse (TGD, i.e., transgender, gender non-binary, or gender non-conforming, also sometimes referred to as "gender minority") persons face elevated rates of many risk factors for poor mental health such as marginalization (James et al., 2016), financial strain (Blosnich et al., 2017a; Lehavot, Simpson, & Shipherd, 2016), housing instability (Blosnich et al., 2017a; Marshall et al., 2016), substance abuse (Clements-Nolle, Marx, & Katz, 2006), transphobia (McDermott, Hughes, & Rawlings, 2018), and healthcare discrimination based on gender identity (Seelman, Colon-Diaz, LeCroix, Xavier-Brier, & Kattari, 2017). As a result, many TGD individuals report high levels of internalized stigma (Marshall et al., 2016) more days with poor mental health than non-TGD populations (Meyer, Brown, Herman, Reisner, & Bockting, 2017), as well as higher rates of mental health conditions such as depression and anxiety (Clements-Nolle et al., 2006; Proctor,

doi: 10.1002/wmh3.403
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Haffer, Ewald, Hodge, & James., 2016; Reisner et al., 2015). These and other factors likely contribute to high rates of suicide attempt and ideation among TGD youth and adults (Blosnich et al., 2016; Clements-Nolle et al., 2006; Connolly, Zervos, Barone, Johnson, & Joseph., 2016; Daniolos, Boyum, & Telingator, 2018; Kuper, Adams, & Mustanski, 2018; Lehavot et al., 2016; McDermott et al., 2018; Moody & Smith, 2013; Progovac et al., 2020; Suen, Chan, & Wong, 2017). Yet little is known about the degree to which violent victimization may contribute to higher suicidality rates among TGD people.

Estimates suggest that over their lifetimes, 55 percent of TGD people have suicidal ideation, and 29 percent attempt suicide (Adams, Hitomi, & Moody, 2017). These rates are much higher than the estimated 9.2 percent lifetime suicide ideation and 2.7 percent suicide attempt rates seen in the general population (Nock et al., 2018). Results from the National Transgender Discrimination Survey found that 41 percent of respondents had reported ever attempting suicide, with higher rates among those who had lost a job (55 percent) or were harassed or bullied in school due to their transgender identity (51 percent) (Grant et al., 2011). However, many existing studies have focused on mental health and suicide risks among TGD youth (Clements-Nolle et al., 2006; Connolly et al., 2016; Daniolos et al., 2018; McDermott et al., 2018) or Veterans (Blosnich, Brown, Wojcio, Jones, & Bossarte, 2014; Blosnich et al., 2016, 2017a; Lehavot et al., 2016; Tucker et al., 2018), and constraints on available data led to fewer research opportunities to address suicidality in typical community samples across age groups.

TGD populations are also at risk for higher levels of minority stress and economic precarity (Frost, Fine, Torre, & Cabana, 2019), which puts them at higher risk of forced sex (Clements-Nolle et al., 2006; James & Herman, 2017), and targeted discrimination, including violent victimization, than the general population. (Blosnich et al., 2017a; Clements-Nolle et al., 2006; Kuper et al., 2018; Langenderfer-Magruder, Whitfield, Walls, Kattari, & Ramos, 2016; Lehavot et al., 2016; Testa et al., 2017). TGD individuals face higher levels of housing- and employment-based discrimination than cisgender lesbian, gay, bisexual, or queer peers (Kattari, Whitfield, Eugene Walls, Langenderfer-Magruder, & Ramos, 2016). A Colorado community study found that 31.1 percent of transgender respondents reported lifetime interpersonal violence, compared with 20.4 percent of cisgender lesbian, gay, or bisexual respondents (Langenderfer-Magruder et al., 2016). In the U.S. Transgender survey, 15 percent of respondents reported being verbally harassed, physically attacked, or sexually assaulted because of their gender identity or gender expression in professional settings, 9 percent reported being physically assaulted in the past year due to being transgender, 10 percent reported past-year sexual assault, and 47 percent reported ever being sexually assaulted (James et al., 2016). Higher rates of homelessness also contribute to some TGD individuals pursuing sex work which raises the risk of violence exposure: 48.1 percent of U.S. Transgender Survey respondents who engaged in sex work reported being homeless, 37.3 percent reported being assaulted by shelter staff, and 35.4 percent report being *sexually* assaulted by the shelter staff (vs. 14.2, 13.0, and 8.8 percent of those who did not engage in sex work, respectively).

It is also worth noting that, although TGD persons are often considered under the broad umbrella of lesbian, gay, bisexual, transgender, or queer (LGBTQ+) populations, in fact, much of the LGBTQ+ research has focused on sexual orientation, with little attention on TGD populations (Collins, McFadden, Rocco, & Mathis, 2015). TGD identities have also been historically excluded from the psychology curriculum (Case, Stewart, & Tittsworth, 2009), and TGD students are often similarly overlooked in efforts to support LGBTQ+ students on college campuses (Newhouse, 2013). Historically, American gay and lesbian activists' views toward TGD persons and their inclusion in the broader LGBTQ+ movement have varied (Stone, 2009). TGD persons, therefore, have faced stigma and exclusion both from outside the LGBTQ+ community and from within it.

Childhood sexual abuse as well as intimate partner violence are associated with a higher risk for suicide attempts among cisgender women, and the relationship is likely causal (Devries & Seguin). Similarly, data from the National Longitudinal Study of Adolescent Health suggests that experiences of violence are a risk factor for future suicide, especially during the transition from adolescence into young adulthood (Van Dulmen et al., 2013). Among TGD populations, the Virginia Transgender Health Initiative Survey showed that a history of physical or sexual violence among transgender respondents was associated with higher rates of suicide attempt and multiple suicide attempts (Testa et al., 2012) and that when physical victimization was due to gender identity or expression, the relative impact on suicidal behavior was higher (Barboza, Dominguez, & Chance, 2016). Similarly, in a subset of 10 states and 9 large urban school districts responding to the Youth Risk Behavior Survey (YRBS) in 2017, transgender youth respondents were more likely to have reported a suicide attempt (adjusted prevalence ratio of 6.30 for transgender and 1.7 for female cisgender compared to male cisgender respondents) (Johns et al., 2019). However, less is known about these overlaps in community-based samples of TGD people, particularly using pragmatic data that may assist health systems in improving services for their TGD patient populations.

Health systems have typically not been able to study these outcomes among their patient populations due to lack of data on gender identity in surveys and administrative databases around gender identity (MacCarthy, Reisner, Nun, Perez-Brumer, & Operario, 2015). However, novel methods to identify TGD populations in claims (Dragon, Guerino, Ewald, & Laffan, 2017; Ewald et al., 2019; McDowell, Progovac, Cook, & Rose, 2019; Proctor et al., 2016; Progovac et al., 2018) and electronic health record (EHR) data (Ehrenfeld, Gottlieb, Beach, Monahan, & Fabbri, 2019; Roblin et al., 2016) have recently enabled the ability to study the overlap of these two important outcomes in health systems. Building upon these methods, we use EHR data and combine two methods of identifying potential TGD patients (diagnosis codes plus keyword search and rapid adaptive chart review) to compare the risk of suicide attempt and ideation as well as the degree to which documented violent victimization is associated with this risk for identified TGD patients compared to other health system patients. These data may help providers, health administrators, and public health officials in planning for needs assessments,

risk screenings, and intervention, and program development for under-studied TGD populations at high risk of suicide attempts and violent victimization.

Methods

Identifying Populations of Study

We used EHR data for patients in an urban, safety net health system between 2008 and 2019 to conduct this secondary data analysis of suicide attempts and ideation risk. This hospital system sees approximately 150,000 patients annually (including via over 90,000 emergency department and over 600,000 ambulatory visits) and has many lower-income patients with Medicaid insurance, as well as patients from diverse racial/ethnic and linguistic backgrounds.

We identified two cohorts for this study: (i) a population of patients who were likely to be TGD patients, and (ii) a general comparison group of other patients in the health system with at least one health system contact for each year of data used. The Institutional Review Board of Cambridge Health Alliance approved all aspects of this research.

We used two different methods to identify from the EHR data a likely-TGD patient cohort (which we will refer to as "*identified* TGD patients," "*likely*-TGD patients," or simply "TGD patients" throughout the paper). It is important to note that neither of these methods incorporates direct self-report of gender identity by patients, which we discuss in more detail below in the limitations section of the discussion.

The first method used an ICD-9/10 diagnosis code-based algorithm developed by the Centers for Medicare and Medicaid Services and described in prior studies (Dragon et al., 2017; Ewald et al., 2019; Proctor et al., 2016; Progovac et al., 2018). These diagnoses are often used for insurance billing when people receive medical care (e.g., hormone therapy) related to gender identity and include in ICD-9: "gender identity disorder" (302.6 and 302.85) and "transsexualism" (302.50–302.53); and the equivalent codes in ICD-10: F64.0, F64.1, F64.2, F64.8, F64.9, as well as Z87.890 (personal history of sex reassignment; see Supporting Information Appendix 1 for a full list of codes). Restricting to the population aged 12–80 years old in their last observed year of EHR data, this method yielded a total of 278 identified gender minorities in the observation years (see Figure 1 for Flow Diagram).

In the second identification method, we used Structured Query Language (SQL) to identify patient notes in the EHR containing keywords in clinical notes that were known to be potentially useful in identifying TGD patients in secondary administrative health system data sets, either as (i) shown in previous research (Roblin et al., 2016); (ii) recommended as part of a multi-stakeholder advisory board including both TGD researchers, advocates, and/or patients as well as clinicians within the health system familiar with the EHR database and treatment of TGD patients within this health system; and (iii) keywords identified during the initial qualitative review of the clinical notes (see Supporting Information Appendix 2 for a full list of keywords). A total of 4,338 patients were first identified

using this method. A senior researcher (the first author) then trained two research assistants to conduct a rapid adaptive chart review to confirm that keyword terms referred to the gender identity of the patient of record (rather than, for example, the gender identity of a parent or family member, or to another concept entirely). To capture the most diverse cohort of people with minority gender experiences, we included individuals with clear evidence of self-identifying as transgender, non-binary, or gender-fluid in the health records, but we also include cases where clinicians had noted people were questioning their gender identity or starting to experience distress related to questioning gender identity.

The chart review was conducted in Microsoft Access 2016, where we constructed a database that consisted of (i) the sentence preceding the search term, (ii) the sentence including the search term, and (iii) the sentence following the search terms. In the database, each of the three sets of sentences was also accompanied by the entire clinical note containing the relevant keyword, which could be further reviewed when the three sentences did not provide adequate context. The identified keywords and notes were also mapped onto an individual person, such that when a single person had multiple occurrences of search terms or multiple occurrences of the same term associated with them, the database listed all of the individual terms for possible review. To facilitate efficiency of chart review, the adaptive database (i) would automatically "flag" the individual and all related notes with the chart review decision once enough notes were reviewed for that person to make a definitive call (see categories below and in Figure 1), and (ii) the Access database also included a number of adaptive features to "hide" cases or "show" certain cases that were identified as being helpful to facilitate chart review. For example, we identified many instances of the term "transgender" were included in clinical notes referring to an LGBTQ hotline and/or a standard structured EHR notes feature copied over into many notes ("[] male, [] female, [] transgender"), but that notes with that reference (without other keywords elsewhere) were almost never sufficient to conduct meaningful chart review. Those exact phrases were able to be "hidden" to reduce reviewer burden for cases where keywords or specific instances of keywords were deemed to be low-yield after starting the review.

Using the Access database, a trained research assistant would use these sentences to flag a given note as "yes" (indicating the person was almost certainly likely to be a likely-TGD patient; $n = 669$ patients were flagged this way), "no" (indicating that this note had no evidence the person was a TGD patient; $n = 2{,}621$ patients were ultimately flagged this way), "maybe" (iteratively discussed with second trained research assistant and/or senior researcher—later excluded if a definitive yes/no decision could not be made; final "maybe" count $n = 7$;), or were simply not reviewed based on the database's adaptive features to exclude non-relevant instances of otherwise relevant search terms ($n = 1{,}041$ patients were ultimately not reviewed). The first author conducted a quality check of the chart review on a keyword-by-keyword basis to ensure at least 95 percent accuracy of classifications performed by the research assistants: a minimum of 2.5 percent of cases were randomly reviewed, resulting in 251 cases quality-checked with an

overall accuracy of 98.0 percent on reviewed notes. Those $n = 5$ cases were also corrected at this stage.

We also identified someone as a likely-TGD patient across the entire study period, regardless of when their diagnosis code or keyword occurred in the study period. A comparison group of patients from the health system EHR was identified, including individuals in each year who have at least one engagement with the health system (which could include a visit but could also include a phone call, setting an appointment, etc.) and who were *not* part of the identified likely-TGD patient cohort. Finally, we restricted all analyses to individuals whose last year of record indicated an age between 12 and 80. The final cohorts included 916 identified likely-TGD patients and 511,026 non-TGD patients.

Identification of Outcome Variables and Covariates

Instances of suicide attempts, suicidal ideation, violence victimization, demographic variables, service utilization, and behavioral health comorbidities were identified using ICD-9 and ICD-10 codes extracted from the health system's EHR.

Measuring Suicidality. We capture suicide attempt using ICD-9 codes as described in prior studies: E95* (injuries of intentional intent; this is code that explicitly measures suicide), and V62.84 (suicidal ideation) (Barak-Corren et al., 2017; Ting, Sullivan, Boudreaux, Miller, & Camargo, 2012). In ICD-10, we capture suicidal ideation using code R45.851, and suicide attempt using the code T14.91 as well as the sub-codes of the T36–T71 series that indicate self-harm: this series of codes represents poisoning by drugs and biological substances, toxic effects of substances chiefly nonmedicinal as to source, and other and unspecified effects of external causes. We also include codes X60–X84 all of which represent intentional self-harm (Barak-Corren et al., 2017; Hedegaard et al., 2018; Simon et al., 2018) (see Supporting Information Appendix Table 3 for a full map of ICD-10 codes series, which are too complex to describe in full here).

Measuring Victimization From Violence and Assault. Violent victimization is often underreported and is difficult to measure in medical claims or EHR data. To increase our ability to capture violent victimization in claims data, we used a broad case definition including ICD-9 codes for abuse, assault, rape, emotional abuse/neglect, and intentional injury for example due to fighting, assault, poisoning, or criminal neglect (Reis, Kohane, & Mandl, 2009) and identified comparable codes in ICD-10 (see Supporting Information Appendix Table 4 for full list of codes).

Service Utilization. We examined primary care, other outpatient, physical health inpatient, emergency department, outpatient behavioral health, and inpatient behavioral health usage for both populations using department and place-of-service information available in the EHR. For each person, we report any use of the above services across their observation period.

Other Covariates or Descriptive Variables. We captured the following additional demographic covariates from the EHR for each patient: the number of years of data observed, age at last observation, sex of record (included in the description but not used in analyses because it is unclear how likely this is accurate for identified TGD patients), race/ethnicity of record (Asian, Black, Hispanic, Native American, other, Portuguese, White, or unknown/missing), last observed health insurance (Medicaid, Medicare, private, self-pay/uninsured, or unknown/missing), the language in which patients received medical care (English, a language other than English, or unknown/missing), and marital status (divorced/widowed/separated, married, single, or unknown/missing).

We also capture behavioral health diagnosis, based on *any* occurrence in observed years of data for the person meeting the Medicare Chronic Conditions Warehouse criteria (Centers for Medicaid and Medicare Services, 2019) for the following conditions: depressive disorder, anxiety disorder, schizophrenia or psychosis, bipolar disorder, tobacco use disorder, alcohol use disorder, or opioid use disorder (the "OUDNumber3" case definition available from medicare).

Statistical Analysis

Analyses were conducted at the person-level. Demographic descriptive comparisons between TGD and non-TGD patients were made using χ^2 (for distributions of categorical variables) or *t-tests* (to compare means of continuous outcomes) as appropriate (Table 1).

We analyzed the association between violence victimization and suicide attempt and ideation in a series of 4 logistic regression models using StataMP 15.1 software (StataCorp. 2017). In Model 1, we modeled the probability of any observed suicide attempt, adjusting for age (continuous), population (likely-TGD vs. non-TGD), violent victimization (yes/no), and the interaction between being identified as likely-TGD and having violent victimization. In other words, we test for whether the association between violent victimization and suicide attempt is the same (or stronger, weaker, or in a different direction) depending on whether someone is in the identified TGD group versus the comparison group of non-TGD patients.

Model 2 also modeled suicide attempt, but included two additional covariates: Medicaid insurance (yes/no, a proxy for the person being lower-income), and White race/ethnicity (yes/no; used as a binary due to small sample sizes limiting power to explore race/ethnicity with more granularity). Models 3 and 4 follow the same pattern as Models 1 and 2, but with the outcome variable of suicidal ideation. After each model, we produce a predicted probability for each outcome based on the model. These predicted probabilities produce population margin average treatment effects for the specified parameters, allowing the covariates to vary as observed (i.e., "marginal standardization") (Muller & MacLehose, 2014; Williams, 2012).

Table 1. Demographic Characteristics of *Identified* Transgender and Gender Diverse (TGD) Versus Other Health System Patients Identified Between 2008 and 2019

	Non-TGD Minority Patients ($n = 511{,}026$), n (%)	*Identified* TGD Patients ($n = 916$), n (%)	Between-Group Difference
Years observed, mean (SE)	3.4 (0.01)	4.9 (0.13)	***
Age, mean (SD)	38.7 (0.023)	30.3 (0.495)	***
Sex of record (Female)	260,392 (51.0)	511 (55.8)	***
Race/ethnicity (group-level comparison)			***
Asian	17,414 (3.4)	14 (1.5)	
Black	42,263 (8.3)	56 (6.1)	
Hispanic	50,144 (9.8)	70 (7.6)	
Native American	133 (0.03)	0 (0.0)	
Other	18,117 (3.5)	16 (1.7)	
Portuguese	47,511 (9.3)	45 (4.9)	
White	193,467 (37.9)	654 (71.4)	
Unknown/missing	141, 977 (27.8)	62 (6.7)	
Health insurance (group level comparison)			***
Medicaid	182,198 (35.7)	328 (35.8)	
Medicare	31,017 (6.1)	73 (8.0)	
Private	136,294 (26.7)	222 (24.2)	
Self-pay or uninsured	101,076 (19.8)	263 (28.7)	
Uknown/missing	60,437 (11.8)	30 (3.3)	
Language of care (group level comparison)			***
English	371,153 (72.6)	869 (94.9)	
Non-English	96,909 (19.0)	43 (4.7)	
Unknown/missing	42,964 (8.4)	4 (0.4)	
Marital status (group level comparison)			***
Divorced, widowed, or separated	32,451 (6.4)	37 (4.0)	
Married	142,556 (27.9)	69 (7.5)	
Single	279,985 (54.8)	792 (86.5)	
Unknown/Missing	51,131 (10.0)	18 (1.9)	

*$p < .05$.
***$p < .001$.

Results

Identified TGD patients differed significantly on observed demographic characteristics compared to the non-TGD patient comparison group (Table 1, all $p < .001$). They were on average younger (mean age 30.3 vs. 38.7), more likely to be White vs. to be from other racial/ethnic backgrounds (71.4 percent White vs. 37.9 percent White), and also less likely to have missing/unreported race/ethnicity in the EHR, had similar prevalence of Medicaid and Medicare insurance but were more likely to be in the self-pay/uninsured category, were more likely to receive health care in English (94.9 vs. 72.6 percent), and more likely to be single (86.5 vs.

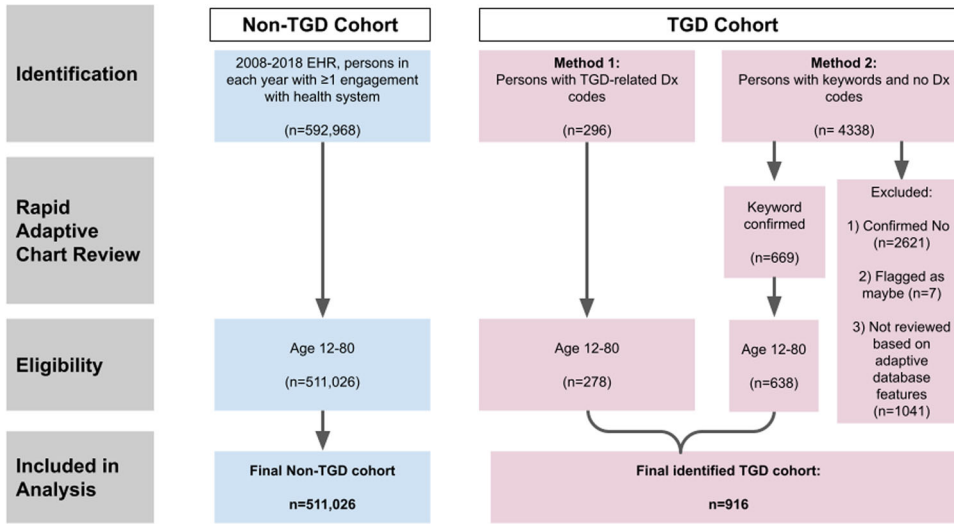

Figure 1 Analytic Cohort Selection Flow Diagram. Dx, diagnosis; TGD, transgender and gender diverse.

54.8 percent). Identified TGD patients also tended to have more years of observable data: 4.9 vs. 3.4 years for the non-TGD comparison group.

Identified TGD patients were more likely to have any documented suicide attempt (5.2 vs. 0.4 percent), suicidal ideation (20.5 vs. 1.8 percent), and violent victimization (5.4 vs. 1.7 percent) than the non-TGD patient comparison group (Table 2), all $p < .001$. TGD patients were statistically more likely ($p < .001$) to have all of the studied behavioral health diagnoses, with the exception of opioid use disorder (not significant). Depression and anxiety disorders were especially prevalent for identified TGD patients (43.7 and 43.2 percent, respectively). Not surprisingly given the relative distribution of indicated diagnoses, healthcare utilization patterns also differed substantially between identified TGD and comparison non-TGD patients, with TGD patients much more likely to have had an outpatient behavioral visit (55.3 vs. 12.6 percent) and a behavioral health inpatient hospitalization (29.9 percent vs. 3.1 percent), both $p < .001$. They were also significantly more likely to use primary care, physical health outpatient services (e.g., other non-mental health specialties), and to have a physical health hospitalization, although the magnitude of difference in utilization for these outcomes was not as large.

In *Model 1* (Table 3), age-adjusted logistic regression odds of suicide attempt was much higher for TGD patients compared to non-TGD patients (odds ratio [OR, 14.63; $p < .001$), and odds of suicide were also much higher for individuals with violent victimization (OR, 7.87; $p < .001$). Although we report interaction terms of logistic models in Table 3, we do not discuss them here due to the problems with interpretation of interaction terms in logistic models (Ai & Norton, 2003) (these results will be discussed via predicted probabilities). When adding Medicaid status and White vs. non-white race/ethnicity as covariates in *Model 2*, the odds of suicide

Table 2. Health and Service Use for *Identified* Transgender and Gender Diverse (TGD) Versus Other Health System Patients Identified Between 2008 and 2019

	Non-TGD Patients ($n = 511{,}026$), n (%)	*Identified* TGD Patients ($n = 916$), n (%)	Between-Group Difference
Primary variables of interest			
Any suicide attempt	1,873 (0.4)	48 (5.2)	***
Any suicide ideation	9,114 (1.8)	188 (20.5)	***
Any violence victimization	8,772 (1.7)	50 (5.4)	***
Behavioral health diagnoses			
Any mental health condition (depression, anxiety, schizophrenia/psychosis, or bipolar)	80,312 (15.7)	619 (67.6)	***
Depressive disorder	41,229 (8.1)	400 (43.7)	***
Anxiety disorder	40,570 (7.9)	396 (43.2)	***
Schizophrenia or psychosis	6,166 (1.2)	82 (9.0)	***
Bipolar disorder	10,420 (2.0)	171 (18.7)	***
Tobacco use disorder	21,011 (4.1)	91 (9.9)	***
Alcohol use disorder	11,319 (2.2)	61 (6.7)	***
Opioid use disorder	9,771 (1.9)	24 (2.6)	n.s.
Health-care utilization			
Any primary care visits	218,852 (42.8)	509 (55.6)	***
Any physical health outpatient visits (other than primary care)	173,268 (33.9)	372 (40.6)	***
Any behavioral health outpatient visits	64,178 (12.6)	507 (55.3)	***
Any behavioral health inpatient hospitalizations	15,879 (3.1)	274 (29.9)	***
Any physical health inpatient hospitalizations	88,881 (17.4)	191 (20.9)	**

Note: n.s., not significant.
**$p < .01$.
***$p < .001$.

attempt for TGD patients was still very elevated although somewhat attenuated (OR. 10.84; $p < .001$), and the odds for those patients who had experienced violentvictimization were similar (OR, 7.23; $p < .001$), while Medicaid insurance increased the risk of suicide attempt (OR, 1.16; $p < .01$), as did White race/ethnicity (OR, 2.76; $p < .001$). Given the different distribution of race/ethnicity between TGD and non-TGD patients, this result should be interpreted with caution.

For suicidal ideation in *Model 3* (age-adjusted), the risk of ideation was much higher for TGD compared with non-TGD patients (OR, 14.89; $p < .001$), and odds of ideation were much higher for individuals with violent victimization (OR, 7.48; $p < .001$). Adding Medicaid and White vs. non-White race/ethnicity as covariates in *Model 4,* similarly slightly attenuated the very elevated risk of suicidal ideation for gender minorities (OR, 11.03; $p < .001$) and by a history of violence victimization (OR, 6.83; $p < .001$). Medicaid (OR, 1.41; $p < .001$) and White race/ethnicity (OR, 3.16; $p < .001$) also predicted higher suicidal ideation.

Table 3. Modeling Results

	Outcome = Suicide Attempt				Outcome = Suicidal Ideation			
	Model 1: Adjusted for Age, Violence, TGD, Violence × TGD		Model 2: Adjusted for Age, Violence, TGD, Violence × TGD, Medicaid, Race/Ethnicity		Model 3: Adjusted for Age, Violence, TGD, Violence × TGD		Model 4: Adjusted for Age, Violence, TGD, Violence × TGD, Medicaid Status, Race/Ethnicity	
	Odds Ratios (OR) (95% CI)	*p* Value	Odds Ratios (OR) (95% CI)	*p* Value	Odds Ratios (OR) (95% CI)	*p* Value	Odds Ratios (OR) (95% CI)	*p* Value
Identified TGD (vs. non-GM)	14.63 (10.71, 19.97)	***	10.84 (7.93, 14.83)	***	14.89 (12.59, 17.61)	***	11.03 (9.30, 13.08)	***
Violence victimization ever (vs. never)	7.87 (6.84, 9.06)	***	7.23 (6.28, 8.33)	***	7.48 (6.97, 8.02)	***	6.83 (6.36, 7.34)	***
TGD × Violence victimization	0.28 (0.11, 0.75)	*	0.36 (0.13, 0.98)	*	0.19 (0.10, 0.36)	***	0.26 (0.13, 0.51)	***
Age (years)	0.99 (0.99, 0.99)	***	0.991 (0.988, 0.993)	***	0.996 (0.994,0.997)	***	0.997 (0.996, 0.998)	***
Medicaid (vs. other insurance; a proxy for lower income status)	n/a	n/a	1.16 (1.06, 1.27)	**	n/a	n/a	1.41 (1.36, 1.47)	***
White (vs. non-White)	n/a	n/a	2.76 (2.51, 3.03)	***	n/a	n/a	3.16 (3.02, 3.30)	***
Intercept	0.005 (0.004, 0.005)	***	0.002 (0.002, 0.002)	***	0.019 (0.018, 0.020)	***	0.008 (0.008, 0.008)	***

Note: CI, confidence interval; n/a, not applicable; TGD, (*Identified*) transgender and gender diverse patients.
*$p < .05$.
**$p < .01$.
***$p < .001$.

Table 4. Predicted Probabilities for Suicide Attempt and Suicidal Ideation

		Predicted Probabilities, mean (*SE*)					
		Non-TGD	*Identified* TGD	First Difference	First Difference, *p* Value	Difference in Difference	Diff-in-Diff, *p* Value
Model 1: Suicide attempt, adjusted for age, Violence × TGD	Prior violence	0.025 (0.002)	0.096 (0.041)	0.071 (0.041)	n.s.	0.028 (0.042)	n.s.
	No prior violence	0.003 (0.000)	0.046 (0.007)	0.043 (0.007)	***		
Model 2: Suicide attempt, adjusted for age, Violence × TGD, Medicaid, White (vs. non-White) race/ethnicity	Prior violence	0.023 (0.002)	0.084 (0.036)	0.061 (0.036)	n.s.	0.030 (0.036)	n.s.
	No prior violence	0.003 (0.000)	0.034 (0.005)	0.031 (0.005)	***		
Model 3: Suicide ideation, adjusted for age, Violence × TGD	Prior violence	0.110 (0.003)	0.257 (0.062)	0.147 (0.062)	*	−0.034 (0.063)	n.s.
	No prior violence	0.016 (0.000)	0.197 (0.013)	0.181 (0.013)	***		
Model 4: Suicide ideation, adjusted for age, Violence × TGD, Medicaid, White (vs. non-White) race/ethnicity	Prior violence	0.099 (0.003)	0.229 (0.055)	0.130 (0.055)	*	−0.002 (0.056)	n.s.
	No prior violence	0.016 (0.000)	0.148 (0.010)	0.132 (0.010)	***		

Note: n.s., not significant; TGD, transgender and gender diverse patients.
*$p < .05$.
***$p < .001$.

Predicted probabilities are shown in Table 4, and show that in general, TGD patients are at higher risk of each outcome (suicide attempt and suicidal ideation) compared with non-TGDs whether or not they had experienced violence victimization, but that rates of each outcome were also highest among those with violent victimization. For example, in Model 3, predicted probabilities of suicidal ideation were highest for TGD patients with violence victimization (0.257) and significantly higher than for non-TGD patients with violent victimization (0.110, comparison $p < .05$), but predicted probabilities for suicidal ideation were also fairly high for TGD patients *without* violent victimization (0.197) and significantly higher than for non-TGD patients without violent victimization (0.016, comparison; $p < .001$). There were two exceptions to this general rule: the "first differences" for predicted probabilities of suicide attempt for TGD versus non-TGD patients *among those patients who had violent victimization* were not significant in Model 1 or adjusted Model 2: while the point estimates were larger for TGD patients, the samples are too small to determine if this difference is significant. None of the second differences were significant when contrasting our predicted probabilities, meaning that we found no evidence for the differential impact of violent victimization for TGD versus non-TGD patients.

Discussion

Data derived from patients aged 12–80 years old in a safety net health system and based on two methods of identification for TGD patients from 2008 to 2019 in EHR data show that identified TGD patients have significantly higher rates of suicide attempt and ideation, as well as violence victimization, compared to non-TGD patients. In logistic regression models, TGD status and violence victimization are both very significant independent predictors of suicide attempt and ideation, even after adjustment for age, Medicaid status, and race/ethnicity. Using predicted probabilities, we did not find evidence for a significant interaction between violence victimization and TGD status (i.e., differential impact of violence victimization based on being an identified TGD patient), although some of these results should also be interpreted with caution due to the smaller sample sizes among TGD patients who had both violent victimization and suicide attempt. Overall, these data suggest that higher rates of suicide attempt and ideation for TGD patients may be both related to the higher rates of violent victimization among TGD patients, as well as a higher baseline rate of suicide attempt and ideation for TGD patients, even in the absence of violent victimization.

These data add to a growing literature identifying higher levels of suicidality for TGD populations, and that violence victimization as well as lower income levels are associated with these higher suicidality rates (Blosnich et al., 2014, 2016, 2017a; Borges et al., 2006; Brown & Jones, 2016; Clements-Nolle et al., 2006; Connolly et al., 2016; Daniolos et al., 2018; Lehavot et al., 2016; Marshall et al., 2016; McDermott et al., 2018; Moody & Smith, 2013; Pico-Alfonso et al., 2006; Suen et al., 2017). Prior work in this area which has been fundamental to calling attention to this significant public health problem has typically focused on survey data, or

specific sub-populations such as TGD youth (Clements-Nolle et al., 2006; Connolly et al., 2016; Daniolos et al., 2018; McDermott et al., 2018) or Veterans (Blosnich et al., 2014, 2016, 2017a; Lehavot et al., 2016; Tucker et al., 2018). Such data are critical to researchers, healthcare workers, public health, and health systems alike, but they can often be difficult to apply directly for health systems, for example, in the absence of a comparison group of patients. Our data are derived instead from a diverse sample of community-dwelling patients aged 12–80, using health record data. Although these data were observed over a long time period (2008–2019), the observed prevalence rates cannot be directly compared to those found in survey data asking about lifetime suicide attempt or ideation by recall: in this case, only those visits which result in a coded claim for suicide attempt or suicidal ideation would be captured. However, our findings for suicidality are similar to rates found in other EHR databases of transgender Veterans (where 13.8 percent had experienced suicidal ideation and 7.1 percent had attempted suicide) (Blosnich et al., 2017a). The observed rates of violent victimization in our data are lower than those observed by past-year self-report (Valentine et al., 2017), however, suggesting that many instances of violence are not observed in EHR data.

These data derived from EHRs also provide potential insights as far as strategies for identifying patients, and especially TGD patients, at high risk for suicidality or violence victimization. Of note, we found that identified TGD patients were at least as likely to have ever had a primary care visit (55.6 percent), and much more likely to have had outpatient behavioral health visits (55.3 percent), than non-TGD patients (41.8 and 12.6 percent, respectively). This suggests that, on the one hand, behavioral health providers may be uniquely positioned to help screen for suicide attempts as well as violence victimization for this high-risk patient population. On the other hand, it also demonstrates that as TGD patients in our sample frequented primary care clinics at least as often as they had passed through behavioral health clinics, primary care providers should also receive appropriate training for helping identify suicidal thoughts and/or violence victimization for TGD patient populations in order to facilitate better treatment.

There is a vast literature around screening for suicide risk in primary care, including literature suggesting it is feasible to identify suicidal ideation in primary care (Olfson, Weissman, Leon, Sheehan, & Farber, 1996) if providers are trained well, using either structured items or through meaningful questioning on the part of the primary care provider (Dueweke, Marin, Sparkman, & Bridges, 2018). Training for suicide risk assessments in primary care, whether using structured items (Diamond et al., 2017; Lawrence et al., 2010) or in conversation with the patient, may require increased training for primary care providers about additional concerns faced by many TGD patients. For example, healthcare discrimination based on gender identity is frequently reported by TGD patients, resulting in delaying or sometimes avoiding health care altogether (Seelman et al., 2017). Suicidal ideation in particular is also often not reported out of concerns for involuntary hospitalization (Richards et al., 2018), and perhaps in part because both physicians and patients express discomfort around having these conversations (Bajaj et al., 2008). Difficulty finding a trusting patient-provider relationship for TGD

patients (Poteat, German, & Kerrigan., 2013) may be partially explained or at least partially complicated by the fact that providers frequently lack training in properly caring for these patient populations (James et al., 2016). When TGD individuals are also seeking transition-related medical care, they may similarly avoid disclosing suicidal thoughts for fear that their treatment may be stopped or delayed (Bess & Stabb, 2009; Bockting, Robinson, Benner, & Scheltema, 2004). Patients and providers may have similar concerns about screening for violence exposures, including intimate partner or relationship-based violence; however, data suggest that patients are willing to speak about intimate provider violence if asked about these experiences and that, moreover, a number of brief, reliable, and valid screeners exist (Davis & Padilla-Medina., 2019; Portnoy et al., 2018). For providers of TGD patients, it may be important to note that mental healthcare providers are the second most common sources from which transgender survivors of intimate partner violence seek support (39.5 percent), preceded only by friends (76.7 percent), and followed by family (30.2 percent) (Kurdyla, Messinger, & Ramirez, 2019). Determining whether the types of routine screening that are conducted in physicians' offices (e.g., "Do you feel safe at home?") adequately capture risk for TGD populations, who may actually be more fearful of being victimized outside the home or in other settings, may be important to improving risk assessment and therefore treatment for TGD patients.

Although this study adds to a growing literature around violence victimization and suicidality for TGD patients, there are several important limitations. First, identification of TGD patients did not rely on self-report, and will therefore miss any people who may self-identify, but who did not either have an associated diagnosis code or who had an associated keyword in their record that indicated they may identify as TGD and/or that they were questioning or exploring their gender identity. Observing several notable differences between the TGD and non-TGD patient samples in our data (e.g., younger age, more likely to be white, more likely to speak English at home), it is also possible that older, non-White, or non-English speaking TGD patients are less likely to be captured using these methods. Second, our definition of identified TGD patients was broad, but there may be important differences in violence victimization for subgroups within our sample, such as transgender women, who may be more likely to be targets of violence. Third, observed rates of both suicide attempt and violence victimization in EHRs will be lower than the true rate, due to under-reporting or under recording. Fourth, and related to the third limitation, we do not capture the fear of violence victimization (Veldhuis, Drabble, Riggle, Wootton, & Hughes, 2018) and/or awareness of violence victimization experienced by others, including but not limited to news coverage about gender-based violence or knowledge of experiences of others in ones' social network who are also TGD. Fifth, TGD individuals identified had approximately 1.5 more years of follow-up time than non-TGD individuals, which may provide more opportunity to capture suicidality and violence victimization outcomes; a related possibility is that because TGD patients were more frequently seen in behavioral health settings, these providers may be more thoroughly documenting these outcomes.

Conclusions and Policy Implications

Overall, our data suggest much higher rates of suicide attempt, suicidal ideation, and violence victimization for identified TGD patients vs. non-TGD patients in an urban, safety net health system, and that higher rates of violence victimization contribute to but do not fully explain the large difference in suicide attempt and ideation among TGD patients.

Given that we observed TGD patients were frequently seen in both behavioral health and primary care settings over time, one direct policy implication at the clinic level is that it is important that both mental health and primary care providers have both the tools and skills to conduct suicide and violence risk assessments that are appropriate and acceptable for TGD patients in their care. At the level of institutions, hospitals and health systems should strive to adapt and implement transgender-affirming hospital policies such as those published by the Human Rights Campaign and Lambda Legal (Lambda Legal & Human Rights Campaign, 2016). As there continues to be a dearth of training in medical education about issues specific to TGD populations, health systems need to ensure that there are provider, staff, and leadership education and training to develop specific competencies around addressing the needs of TGD patients (Korpaisarn & Joshua, 2018; Stoddard, Leibowitz, Ton, & Snowdon, 2011). Moreover, health systems should strive to safely and respectfully collect information on self-reported gender identity as well social determinants of health (e.g., violence victimization, poverty, food insecurity, etc.) to facilitate easy identification of health disparities to facilitate targeted efforts to improve health and mental healthcare access, quality, and outcomes for this population (Blosnich et al., 2017b; Reisner, White, Bradford, & Mimiaga, 2014). These approaches, combined with leveraging of pragmatic readily available EHR data for health systems may enable not only enhance one-on-one risk assessment and appropriate treatment, but also help health systems coordinate efforts to provide evidence-based, multi-level, coordinated models for promoting wellness for TGD patient populations.

At the state and national level in the United States, improving well-being for TGD populations stems from advocating and advancing policies that promote inclusion and non-discrimination across a variety of sectors, including housing, employment, and health care. National-level policies about TGD-inclusion are constantly under debate, including for example: (i) the recent Housing and Urban Development proposed rule allowing individual housing shelters to make their own decisions about whether to admit TGD persons based on the religious beliefs of the shelter providers, which could lead to serious and dangerous delays in obtaining emergency housing for TGD individuals (ACLU, 2020; Office of the Secretary: Housing and Urban Development, 2020); and (ii) June 2020 updates by the Department of Health and Human Services that reversed a prior decision to interpret "sex discrimination" as including discrimination based on gender identity (HHS Press Office, 2020). As these debates and fluctuations in national-level protections continue, it is especially important for state-level Health and Human

Services and Medicaid agencies to renew commitments (or newly commit) to ensuring access to TGD-inclusive health coverage and non-discrimination.

Notes

We would like to thank all of the participants in our September 2018 Community Forum for their valuable direction and feedback. Preliminary data from this work were previously presented at the Dupont Summit in Washington, D.C. in December 2019. This work was conducted with support from Harvard Catalyst, The Harvard Clinical and Translational Science Center (National Center for Research Resources and the National Center for Advancing Translational Sciences, NIH Award UL1 TR001102-05), and financial contributions from Harvard University and its affiliated academic healthcare centers. Primary funding is through a sub-award pilot grant through Harvard Catalyst (Principal Investigator, Ana Progovac). The content is solely the responsibility of the authors and does not necessarily represent the official views of Harvard Catalyst, Harvard University and its affiliated academic healthcare centers, the NIH, or the Centers for Medicare and Medicaid Services.

Conflicts of interest: Brian Mullin reports stock ownership in the following healthcare-related companies: Proctor & Gamble, Shire PLC, Baxter International, Abbott Labs, Bristol-Meyers Squibb, and AbbVie Inc. No other financial disclosures were reported by the authors of this paper.

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References

ACLU. 2020. *HUD Moves to Allow Anti-Trans Discrimination in Federally Funded Homeless Shelters*, New York, NY: American Civil Liberties Union (ACLU). https://www.aclu.org/press-releases/hud-moves-allow-anti-trans-discrimination-federally-funded-homeless-shelters-1

Adams, Noah, Maaya Hitomi, and Cherie Moody. 2017. "Varied Reports of Adult Transgender Suicidality: Synthesizing and Describing the Peer-Reviewed and Gray Literature." *Transgender Health* 2 (1): 60–75.

Ai, Chunrong, and Edward C. Norton. 2003. "Interaction Terms in Logit and Probit Models." *Economics Letters* 80 (1): 123–9.

Bajaj, Priya, Elena Borreani, Pradip Ghosh, Caroline Methuen, Melissa Patel, and Michael Joseph. 2008. "Screening for Suicidal Thoughts in Primary Care: The Views of Patients and General Practitioners." *Mental Health in Family Medicine* 5 (4): 229–35.

Barak-Corren, Yuval, Victor M. Castro, Solomon Javitt, Alison G. Hoffnagle, Yael Dai, Roy H. Perlis, Matthew K. Nock, Jordan W. Smoller, and Ben Y. Reis. 2017. "Predicting Suicidal Behavior From Longitudinal Electronic Health Records." *American Journal of Psychiatry* 174 (2): 154–62.

Barboza, Gia Elise, Silvia Dominguez, and Elena Chance. 2016. "Physical Victimization, Gender Identity and Suicide Risk Among Transgender Men and Women." *Preventive Medicine Reports* 4: 385–90.

Bess, J., and Sally Stabb. 2009. "The Experiences of Transgendered Persons in Psychotherapy: Voices and Recommendations." *Journal of Mental Health Counseling* 31 (3): 264–82.

Blosnich, John R., George R. Brown, Sybil Wojcio, and Robert M. Bossarte. 2014. "Mortality Among Veterans with Transgender-Related Diagnoses in the Veterans Health Administration, FY2000-2009." *LGBT Health* 1 (4): 269–76.

Blosnich, John R., Mary C. Marsiglio, Melissa E. Dichter, Shasha Gao, Adam J. Gordon, Jillian C. Shipherd, Michael R. Kauth, George R. Brown, and Michael J. Fine. 2017a. "Impact of Social Determinants of Health on Medical Conditions Among Transgender Veterans." *American Journal of Preventive Medicine* 52 (4): 491–8.

Blosnich, John R., Mary C. Marsiglio, Shasha Gao, Adam J. Gordon, Jillian C. Shipherd, Michael R. Kauth, George R. Brown, and Michael J. Fine. 2016. "Mental Health of Transgender Veterans in US States With and Without Discrimination and Hate Crime Legal Protection." *American Journal of Public Health* 106 (3): 534–40.

Blosnich, John R., Mary C. Marsiglio, Melissa E. Dichter, Shasha Gao, Adam J. Gordon, Jillian C. Shipherd, Michael R. Kauth, George R. Brown, and Michael J. Fine. 2017b. "Impact of Social Determinants of Health on Medical Conditions Among Transgender Veterans." *American Journal of Preventive Medicine* 52 (4): 491–8.

Bockting, Walter, Beatrice E. Robinson, Autumn Benner, and Karen Scheltema. 2004. "Patient Satisfaction With Transgender Health Services." *Journal of Sex & Marital Therapy* 30 (4): 277–94.

Borges, Guilherme, Jules Angst, Matthew K. Nock, Ayelet Meron Ruscio, Ellen E. Walters, and Ronald C. Kessler. 2006. "A Risk Index for 12-Month Suicide Attempts in the National Comorbidity Survey Replication (NCS-R)." *Psychological Medicine* 36 (12): 1747–57.

Brown, George R., and Kenneth T. Jones. 2016. "Mental Health and Medical Health Disparities in 5135 Transgender Veterans Receiving Healthcare in the Veterans Health Administration: A Case-Control Study." *LGBT Health* 3 (2): 122–31.

Case, Kim A., Briana Stewart, and Josephine Tittsworth. 2009. "Transgender Across the Curriculum: A Psychology for Inclusion." *Teaching of Psychology* 36 (2): 117–21.

Centers for Medicaid and Medicare Services. 2019. *Medicare Other Chronic and Disabling Conditions: Chronic Conditions Data Warehouse* [Online]. https://www2.ccwdata.org/web/guest/medicare-charts/medicare-other-chronic-and-disabling-conditions. Accessed March 21, 2020.

Clements-Nolle, Kristen, Rani Marx, and Mitchell Katz. 2006. "Attempted Suicide Among Transgender Persons." *Journal of Homosexuality* 51 (3): 53–69.

Collins, Joshua C., Ciarán McFadden, Tonette S. Rocco, and Mary Katherine Mathis. 2015. "The Problem of Transgender Marginalization and Exclusion: Critical Actions for Human Resource Development." *Human Resource Development Review* 14 (2): 205–26.

Connolly, Maureen D., Marcus J. Zervos, Charles J. Barone, Christine C. Johnson, and Christine L. M. Joseph. 2016. "The Mental Health of Transgender Youth: Advances in Understanding." *Journal of Adolescent Health* 59 (5): 489–95.

Daniolos, Peter T., Eric N. Boyum, and Cynthia J. Telingator. 2018. "Suicide and Self-Harm Among Sexual and Gender Minority Youth: Resilience, Coping, and Despair." In *Suicide Among Diverse Youth: A Case-Based Guidebook*, eds. A. J. Pumariega, and N. Sharma.(199–219). Cham: Springer International Publishing.

Davis, Maxine, and Diana M. Padilla-Medina. 2019. "Brief Intimate Partner Violence Perpetration Screening Tools: A Scoping Review." *Trauma, Violence & Abuse* 1: 1–14.

Devries, Karen M., and Maureen Seguin. 2013. "Violence against Women and Suicidality: Does Violence Cause Suicidal Behaviour?" In *Violence against women and mental health*. Karger Publishers, 148–58.

Diamond, Guy S., Joanna L. Herres, E. Stephanie Krauthamer Ewing, Tita O. Atte, Syreeta W. Scott, Matt B. Wintersteen, and Robert J. Gallop. 2017. "Comprehensive Screening for Suicide Risk in Primary Care." *American Journal of Preventive Medicine* 53 (1): 48–54.

Dragon, Christina N., Paul Guerino, Erin R. Ewald, and Alison M. Laffan. 2017. "Transgender Medicare Beneficiaries and Chronic Conditions: Exploring Fee-for-Service Claims Data." *LGBT Health* 4 (6): 404–11.

Dueweke, Aubrey R., Mikenna S. Marin, David J. Sparkman, and Ana J. Bridges. 2018. "Inadequacy of the PHQ-2 Depression Screener for Identifying Suicidal Primary Care Patients." *Families, Systems, & Health* 36(3): 281–88.

Ehrenfeld, Jesse M., Keanan Gabriel Gottlieb, Lauren Brittany Beach, Shelby E. Monahan, and Daniel Fabbri. 2019. "Development of a Natural Language Processing Algorithm to Identify and Evaluate Transgender Patients in Electronic Health Record Systems." *Ethnicity & Disease* 29 (Suppl. 2): 441–50.

Ewald, Erin R., Paul Guerino, Christina N. Dragon, Alison M. Laffan, Zil Goldstein, and Carl Streed. 2019. "Identifying Medicare Beneficiaries Accessing Transgender-Related Care in the Era of ICD-10." *LGBT Health* 6 (4): 166–73.

Frost, David M., Michelle Fine, María Elena Torre, and Allison Cabana. 2019. "Minority Stress, Activism, and Health in the Context of Economic Precarity: Results From a National Participatory Action Survey of Lesbian, Gay, Bisexual, Transgender, Queer, and Gender Non-Conforming Youth." *American Journal of Community Psychology* 63 (3-4): 511–26.

Grant, Jamie M., Lisa A. Mottet, Justin Tanis, Jack Harrison, Jody L. Herman, and Mara Keisling. 2011. *Injustice at Every Turn: A Report of the National Transgender Discrimination Survey*, Washington, DC: National Center for Transgender Equality and National Gay and Lesbian Task Force. https://www.transequality.org/sites/default/files/docs/resources/NTDS_Report.pdf

Hedegaard, Holly, Michael Schoenbaum, Cindy Claassen, Alex Crosby, Kristin Holland, and Scott K. Proescholdbell. 2018. "Issues in Developing a Surveillance Case Definition for Nonfatal Suicide Attempt and Intentional Self-harm Using International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Coded Data." *Natl Health Stat Report* 108: 1–19.

HHS Press Office. 2020. *HHS Finalizes Rule on Section 1557 Protecting Civil Rights in Healthcare, Restoring the Rule of Law, and Relieving Americans of Billions in Excessive Costs*, Washington, DC: Department of Health and Human Services. https://www.hhs.gov/about/news/2020/06/12/hhs-finalizes-rule-section-1557-protecting-civil-rights-healthcare.html

James, Sandy E., and Jody Herman. 2017. *The Report of the 2015 US Transgender Survey: Executive Summary*, Washington, DC: National Center for Transgender Equality. https://ncvc.dspacedirect.org/handle/20.500.11990/1299

James, Sandy E., Jody L. Herman, Susan Rankin, Mara Keisling, Lisa Mottet, and Ma'ayan Anafi. 2016. *The Report of the 2015 U.S. Transgender Survey*, Washington, DC: National Center for Transgender Equality.

Johns, Michelle M., Richard Lowry, Jack Andrzejewski, Lisa C. Barrios, Zewditu Demissie, Timothy McManus, Catherine N. Rasberry, Leah Robin, and J. Michael Underwood. 2019. "Transgender Identity and Experiences of Violence Victimization, Substance Use, Suicide Risk, and Sexual Risk Behaviors Among High School Students - 19 States and Large Urban School Districts, 2017." *MMWR. Morbidity and Mortality Weekly Report* 68 (3): 67–71.

Kattari, Shanna K., Darren L. Whitfield, N. Eugene Walls, Lisa Langenderfer-Magruder, and Daniel Ramos. 2016. "Policing Gender Through Housing and Employment Discrimination: Comparison of Discrimination Experiences of Transgender and Cisgender LGBQ Individuals." *Journal of the Society for Social Work and Research* 7 (3): 427–47.

Korpaisarn, Sira, and Joshua D. Safer. 2018. "Gaps in Transgender Medical Education Among Healthcare Providers: A Major Barrier to Care for Transgender Persons." *Reviews in Endocrine and Metabolic Disorders* 19 (3): 271–5.

Kuper, Laura E., Noah Adams, and Brian S. Mustanski. 2018. "Exploring Cross-Sectional Predictors of Suicide Ideation, Attempt, and Risk in a Large Online Sample of Transgender and Gender Nonconforming Youth and Young Adults." *LGBT Health* 5 (7): 391–400.

Kurdyla, Victoria, Adam M. Messinger, and Milka Ramirez. 2019. "Transgender Intimate Partner Violence and Help-Seeking Patterns." *Journal of Interpersonal Violence* 1: 1–24.

Lambda Legal, and Human Rights Campaign. 2016. "Creating Equal Access to Quality Health Care for Transgender Patients: Transgender-Affirming Hospital Policies." Lambda Legal. https://www.lambdalegal.org/publications/fs_transgender-affirming-hospital-policies

Langenderfer-Magruder, Lisa, Daren L. Whitfield, N. Eugene Walls, Shanna K. Kattari, and Daniel Ramos. 2016. "Experiences of Intimate Partner Violence and Subsequent Police Reporting Among Lesbian, Gay, Bisexual, Transgender, and Queer Adults in Colorado: Comparing Rates of Cisgender and Transgender Victimization." *Journal of Interpersonal Violence* 31 (5): 855–71.

Lawrence, Sarah T., James H. Willig, Heidi M. Crane, Jiatao Ye, Inmaculada Aban, William Lober, Christa R. Nevin et al. 2010. "Routine, Self-Administered, Touch-Screen, Computer- Based Suicidal Ideation Assessment Linked to Automated Response Team Notification in an HIV Primary Care Setting." *Clinical Infectious Diseases* 50 (8): 1165–73.

Lehavot, Keren, Tracy L. Simpson, and Jillian C. Shipherd. 2016. "Factors Associated with Suicidality Among a National Sample of Transgender Veterans." *Suicide & Life-Threatening Behavior* 46 (5): 507–24.

MacCarthy, Sarah, Sari L. Reisner, n Amy Nun, Amaya Perez-Brumer, and Don Operario. 2015. "The Time Is Now: Attention Increases to Transgender Health in the United States but Scientific Knowledge Gaps Remain." *LGBT Health* 2 (4): 287–91.

Marshall, Brandon D. L., María E. Socías, Thomas Kerr, Virginia Zalazar, Omar Sued, and Inés Arístegui. 2016. "Prevalence and Correlates of Lifetime Suicide Attempts Among Transgender Persons in Argentina." *Journal of Homosexuality* 63 (7): 955–67.

McDermott, Elizabeth, Elizabeth Hughes, and Victoria Rawlings. 2018. "The Social Determinants of Lesbian, Gay, Bisexual and Transgender Youth Suicidality in England: A Mixed Methods Study." *Journal of Public Health (Oxford)* 40(3): e244–51.

McDowell, Alex, Ana M. Progovac, Benjamin L. Cook, and Sherri Rose. 2019. "Estimating the Health Status of Privately Insured Gender Minority Children and Adults." *LGBT Health* 6 (6): 289–96.

Meyer, Ilan H., Taylor N. T. Brown, Jody L. Herman, Sari L. Reisner, and Walter O. Bockting. 2017. "Demographic Characteristics and Health Status of Transgender Adults in Select US Regions: Behavioral Risk Factor Surveillance System, 2014." *American Journal of Public Health* 107 (4): 582–9.

Moody, Chérie, and Nathan Grant Smith. 2013. "Suicide Protective Factors Among Trans Adults." *Archives of Sexual Behavior* 42 (5): 739–52.

Muller, Clemma J., and Richard F. MacLehose. 2014. "Estimating Predicted Probabilities From Logistic Regression: Different Methods Correspond to Different Target Populations." *International Journal of Epidemiology* 43 (3): 962–70.

Newhouse, Maria R. 2013. "Remembering the "T" in LGBT: Recruiting and Supporting Transgender Students." *Journal of College Admission* 220: 22–7.

Nock, Matthew K., Guilherme Borges, Evelyn J. Bromet, Jordi Alonso, Matthias Angermeyer, Annette Beautrais, Ronny Bruffaerts et al. 2018. "Cross-National Prevalence and Risk Factors for Suicidal Ideation, Plans and Attempts." *British Journal of Psychiatry* 192 (2): 98–105.

Office of the Secretary: Housing and Urban Development. 2020. *Making Admission or Placement Determinations Based on Sex in facilities Under Community Planning and Development Housing Programs*, 24 CFR Part 5. Washington, DC: Department of Housing and Urban Development.

Olfson, Mark, Myrna M. Weissman, Andrew C. Leon, David V. Sheehan, and Leslie Farber. 1996. "Suicidal Ideation in Primary Care." *Journal of General Internal Medicine* 11 (8): 447–53.

Pico-Alfonso, Maria A., M. Isabel Garcia-Linares, Nuria Celda-Navarro, Concepcion Blasco-Ros, Enrique Echeburúa, and Manuela Martinez. 2006. "The Impact of Physical, Psychological, and Sexual Intimate Male Partner Violence on Women's Mental Health: Depressive Symptoms, Posttraumatic Stress Disorder, State Anxiety, and Suicide." *Journal of Women's Health* 15 (5): 599–611.

Portnoy, Galina A., Sally G. Haskell, Matthew W. King, Rachel Maskin, Megan R. Gerber, and Katherine M. Iverson. 2018. "Accuracy and Acceptability of a Screening Tool for Identifying Intimate Partner Violence Perpetration among Women Veterans: A Pre-Implementation Evaluation." *Women's Health Issues* 28 (5): 439–45.

Poteat, Tonia, Danielle German, and Deanna Kerrigan. 2013. "Managing Uncertainty: A Grounded Theory of Stigma in Transgender Health Care Encounters." *Social Science & Medicine* 84: 22–9.

Proctor, Kimberly, Samuel C. Haffer, Erin Ewald, Carla Hodge, and Cara V. James. 2016. "Identifying the Transgender Population in the Medicare Program." *Transgender Health* 1 (1): 250–65.

Progovac, Ana M., Benjamin L. Cook, Brian O. Mullin, Alex McDowell, Maria Jose Sanchez R, Ye Wang, Timothy B. Creedon, and Mark A. Schuster. 2018. "Identifying Gender Minority Patients' Health And Health Care Needs In Administrative Claims Data." *Health Affairs* 37 (3): 413–20.

Progovac, Ana M., Brian O. Mullin, Emilia Dunham, Sari L. Reisner, Alex McDowell, Maria Jose Sanchez Roman, Mason Dunn et al. 2020. "Disparities in Suicidality by Gender Identity Among Medicare Beneficiaries." *American Journal of Preventive Medicine* 58: 789–98.

Reis, Ben Y., Isaac S. Kohane, and Kenneth D. Mandl. 2009. "Longitudinal Histories as Predictors of Future Diagnoses of Domestic Abuse: Modelling Study." *BMJ* 339: b3677.

Reisner, Sari L., Ralph Vetters, M. Leclerc, Shayne Zaslow, Sarah Wolfrum, Daniel Shumer, and Matthew J. Mimiaga. 2015. "Mental Health of Transgender Youth in Care at an Adolescent Urban Community Health Center: A Matched Retrospective Cohort Study." *Journal of Adolescent Health* 56 (3): 274–9.

Reisner, Sari L., Jaclyn M. White, Judith B. Bradford, and Matthew J. Mimiaga. 2014. "Transgender Health Disparities: Comparing Full Cohort and Nested Matched-Pair Study Designs in a Community Health Center." *LGBT Health* 1 (3): 177–84.

Richards, Julie E., Ursula Whiteside, Evette J. Ludman, Chester Pabiniak, Beth Kirlin, Rianna Hidalgo, and Greg Simon. 2018. "Understanding Why Patients May Not Report Suicidal Ideation at a Health Care Visit Prior to a Suicide Attempt: A Qualitative Study." *Psychiatric Services*:appi. ps. 201800342.

Roblin, Douglas, Joshua Barzilay, Dennis Tolsma, Brandi Robinson, Laura Schild, Lee Cromwell, Hayley Braun et al. 2016. "A Novel Method for Estimating Transgender Status Using Electronic Medical Records." *Annals of Epidemiology* 26 (3): 198–203.

Seelman, Kristie L., Mathew J. P. Colón-Diaz, Rebecca H. LeCroix, Marik Xavier-Brier, and Leonardo Kattari. 2017. "Transgender Noninclusive Healthcare and Delaying Care Because of Fear: Connections to General Health and Mental Health Among Transgender Adults." *Transgender Health* 2 (1): 17–28.

Simon, Gregory E., Eric Johnson, Jean M. Lawrence, Rebecca C. Rossom, Brian Ahmedani, Frances L. Lynch, Arne Beck et al. 2018. "Predicting Suicide Attempts and Suicide Deaths Following Outpatient Visits Using Electronic Health Records." *American Journal of Psychiatry* 175 (10): 951–60.

StataCorp. 2017. *Stata Statistical Software: Release 15*, College Station, TX: StataCorp LLC. https://www.stata.com/stata15/

Stoddard, Joel, Scott F. Leibowitz, Hendry Ton, and Shane Snowdon. 2011. "Improving Medical Education About Gender-Variant Youth and Transgender Adolescents." *Child and Adolescent Psychiatric Clinics* 20 (4): 779–91.

Stone, Amy L. 2009. "More than Adding a T: American Lesbian and Gay Activists' Attitudes towards Transgender Inclusion." *Sexualities* 12 (3): 334–54.

Suen, Yiu Tung, Randolph Chun Ho Chan, and Eliz Miu Yin Wong. 2017. "Mental Health of Transgender People in Hong Kong: A Community-Driven, Large-Scale Quantitative Study Documenting Demographics and Correlates of Quality of Life and Suicidality." *Journal of Homosexuality* 65: 1–21.

Testa, Rylan J., Matthew S. Michaels, Whitney Bliss, Megan L. Rogers, Kimberly F. Balsam, and Thomas Joiner. 2017. "Suicidal Ideation in Transgender People: Gender Minority Stress and Interpersonal Theory Factors." *Journal of Abnormal Psychology* 126 (1): 125–36.

Testa, Rylan J., Laura M. Sciacca, Florence Wang, Michael L. Hendricks, Peter Goldblum, Judith Bradford, and Bruce Bongar. 2012. "Effects of Violence on Transgender People." *Professional Psychology: Research and Practice* 43 (5): 452–9.

Ting, Sarah A., Ashley F. Sullivan, Edwin D. Boudreaux, Ivan Miller, and Carlos A. Camargo, Jr. 2012. "Trends in US Emergency Department Visits for Attempted Suicide and Self-Inflicted Injury, 1993–2008." *General Hospital Psychiatry* 34 (5): 557–65.

Tucker, Raymond P., Rylan J. Testa, Tracy L. Simpson, Jillian C. Shipherd, John R. Blosnich, and Keren Lehavot. 2018. "Hormone Therapy, Gender Affirmation Surgery, and Their Association With Recent Suicidal Ideation and Depression Symptoms in Transgender Veterans." *Psychological Medicine* 48: 1–8.

Valentine, Sarah E., Sarah M. Peitzmeier, Dana S. King, Conall O'Cleirigh, Samantha M. Marquez, Cara Presley, and Jennifer Potter. 2017. "Disparities in Exposure to Intimate Partner Violence Among Transgender/Gender Nonconforming and Sexual Minority Primary Care Patients." *LGBT Health* 4 (4): 260–7.

Van Dulmen, Manfred, Andrea Mata, Shannon Claxton, Katherine Klipfel, Katherine Schinka, Monica Swahn, and Robert Bossarte. 2013. "Longitudinal Associations Between Violence and Suicidality From Adolescence into Adulthood." *Suicide and Life-Threatening Behavior* 43 (5): 523–31.

Veldhuis, Cindy B., Laurie Drabble, Ellen D. B. Riggle, Angie R. Wootton, and Tonda L. Hughes. 2018. ""I Fear for My Safety, but Want to Show Bravery for Others": Violence and Discrimination Concerns Among Transgender and Gender-Nonconforming Individuals After the 2016 Presidential Election." *Violence and Gender* 5 (1): 26–36.

Williams, Richard. 2012. "Using the Margins Command to Estimate and Interpret Adjusted Predictions and Marginal Effects." *Stata Journal* 12 (2): 308–31.